

1996

The role of oil exports in the economic development of Iran 1960-1992

Mahmood Haerian Ardakani
University of Wollongong

Follow this and additional works at: <https://ro.uow.edu.au/theses>

University of Wollongong

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.

Recommended Citation

Haerian Ardakani, Mahmood, The role of oil exports in the economic development of Iran 1960-1992, Doctor of Philosophy thesis, Department of Economics - Faculty of Commerce, University of Wollongong, 1996. <https://ro.uow.edu.au/theses/1327>

NOTE

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

UNIVERSITY OF WOLLONGONG

COPYRIGHT WARNING

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

THE ROLE OF OIL EXPORTS IN THE ECONOMIC DEVELOPMENT OF IRAN 1960-1992

A thesis submitted in fulfilment of the requirement
for the award of the degree

Doctor of Philosophy

from



University of Wollongong

New South Wales
Australia

by



Mahmood Haerian Ardakani

BS in Economics (Iran)
MS in Industrial Management (USA)

Department of Economics
February, 1996

DECLARATION

I hereby certify that this thesis has not been submitted previously as part of the requirements of another degree and that it is the result of my own independent research.

Mahmood Haerian Ardakani

DEDICATION

To my parents, my wife, and my daughters, Maryam, Samar and Sara Haerian for the devotion and support given during the research project.

THE ROLE OF OIL EXPORTS IN THE ECONOMIC DEVELOPMENT OF IRAN 1960-1992

ABSTRACT

The main purpose of this thesis is to investigate the impact of oil exports on the process of the economic growth in Iran during the period 1960-1992. The study uses single and simultaneous equation regression models to test export-led-growth models in the context of the Iranian economy.

The results would seem to suggest that the Iranian economy has been financed with large amounts of oil revenues in the past three decades, especially after the jump in oil prices in 1973. However, the regression analysis suggests that the Iranian economy did not gain as much from these price rises as the other oil producers because of the negative effects of the political turmoil during the last year of the Shah's rule in 1978, the transition of power to the Islamic government and, most of all, because of the heavy damages of the Iraqi-Iranian war.

Despite these negative effects the oil sector has played the role of the "leading sector" in the last three decades. The results of the simultaneous equation models suggest that Iranian exports to its major trading partners had a significant impact on the growth of the Iranian economy. The simultaneous regression results also suggest the absence of the feedback effect between the Iranian economy and other economies under study except Brazil, Romania, Singapore and Turkey.

The study predicts that the oil sector will continue to play a leading role in future Iranian economic development.

ACKNOWLEDGMENTS

Praise be to God Who taught man what he knew not (The Holy Quran, 96-5).

This thesis was completed under the supervision of Associate Professor Mokhtar Mohammad Metwally. I would like to express my special appreciation to Professor Metwally whose knowledge, experience, and continuous and sincere supervision made this project possible. His guidance throughout the dissertation process was necessary for its progress.

A thesis such as this relies on many people for its successful completion. In this regard, my sincere thanks go to Ms Diana Kelly for her useful advice, encouragement and, support, not to mention the extensive time she gave to reading and evaluating my prose. Many thanks are also extended to Professor Robert Castle, Head of the Department of Economic at the University of Wollongong, for the friendly working environment he created.

I am also deeply indebted to the Ministry of Culture and Higher Education of Iran for its sponsorship.

Thanks as well go to the academic and administrative staff of the Department for their valuable advice and assistance, while the support of Mr. Bizhan Latif made it possible for me to collect necessary data from Iranian sources.

Last, but not least, deepest and most profound thanks go to my parents and other members of my family whose sacrifices, love, patience and understanding provided the necessary stimulus to completing this endeavour.

TABLE OF CONTENTS

Declaration	i
Dedication	ii
Abstract	iii
Acknowledgments	iv
Table of Contents	v
List of Tables	xii
List of Figures	xv

CHAPTER 1

Introduction	1
1.1. Background of the Study	1
1.2. The Problem	4
1.3. Objectives of the Study	4
1.4. Hypothesis of the Study	5
1.5. The Methodology	6
1.6. Previous Studies on the Role of Oil Exports in Iranian Economic Development	6
1.7. Plan of the Study	16
1.8. Summary and Conclusions	17

CHAPTER 2

Iran

2.1. The Geographical Position	18
2.2. The Climate	18
2.3. The Demography	20
2.4. The History	22
2.5. The Politics	24
2.5.1 The Overthrow of the Old Order	26
2.5.2 The Islamic Republic of Iran	27
2.6. The Iranian Oil Industry: Historical Context	28
2.6.1. Nationalisation of the Oil Industry	30
2.6.2. Post Nationalisation of the Oil Industry	31
2.6.3. Contribution of the Oil Sector to the Financing of Economic Development in Iran	34
2.7. Conclusion	37

CHAPTER 3

Structure of the Iranian Economy	38
3.1 Introduction	38
3.2. Population Characteristics	38
3.3. Aggregate Demand	41

3.3.1. The Patterns of Consumption	41
3.3.2. Government Expenditure and Investment	42
3.4. Sectoral Output and Employment	43
3.4.1 The Agricultural Sector	44
3.4.2. The Oil Sector	44
3.4.3. Industrial Sector	45
3.4.4. Services Sector	46
3.5. International Economic Relations	47
3.6. Government Revenue	49
3.7. Government Expenditure	50
3.8. The Social Indicators	51
3.9. Summary and Conclusions	54

CHAPTER 4

Performance of the Iranian Economy 1960-1992	55
4.1. Introduction	55
4.2. Population growth and employment	56
4.3. Growth of GDP and non-oil GDP	57
4.4. Private and Government Consumption	61
4.5. Gross Fixed Capital Formation	61
4.6. Exports and Imports	62
4.7. Sectoral Growth	64

4.7.1: The Agricultural Sector	65
4.7.2. The Oil Sector	67
4.7.3. The Industrial Sector	69
4.7.4. The Services Sector	71
4.8. Summary and Conclusions	74

CHAPTER 5

Long Term Fluctuations in World Oil Prices	76
5.1 Introduction	76
5.2. Behaviour of Oil Prices During 1955-92	78
5.3. A Comparison Between the Degree of Fluctuation in Oil Prices and in Prices of Other Commodities	80
5.4. The Structure of the Oil Market	85
5.4.1. Changes in World Demand of Oil	86
5.4.2. Changes in World Supply of Oil	87
5.5. The Market Model	88
5.5.1. Decline in OPEC Market Share and Price	89
5.6. Impact of Oil Fluctuation on Development of Oil Exporting LDCs	92
5.7. Summary and Conclusions	94
Appendix 5A	95

CHAPTER 6	99
Exports and Growth: A Theoretical Survey	99
6.1. Introduction	99
6.2. Export-led Growth Models	99
6.3. Previous Empirical Studies	104
6.4. Summary	111
 CHAPTER 7	
Effect of Oil Exports on Aggregate and Sectoral Development in Iran 1960-92	
7.1. Introduction	112
7.2. The Hypothesis of the Study:	112
7.3. The Methodology	115
7.4. The Models and Data	115
7.5. The Empirical Results	120
7.5.1. The Effect of Oil Exports on Non-Oil GDP	120
7.5.2. The Effect of Exports on the Agricultural Sector Output	121
7.5.3. The Effect of Oil Exports on the Construction Sector	123
7.5.4. The Effect of Exports on the Electricity, Gas and Water Sector	123
7.5.5. The Effect of Exports on the Manufacturing Sector	125
7.5.6. The Effect of Exports on the Mining Sector	126
7.5.7. The Effect of Oil Exports on the Services Sector	126

7.6. Summary and Conclusions:	127
-------------------------------	-----

CHAPTER 8

Trade Relationship Between Iran and its Major Trading Partners: A Simultaneous Equations Model	129
8.1. Introduction	129
8.2. Previous Studies	131
8.3. The Methodology and the Model	135
8.4. The Magnitude of Trade Between Iran and its Major Trade Partners	138
8.5. The Regression Results	139
8.6. Summary and Conclusions	151
Appendix 8A: Establishing Identification from the Structural form of the Model	154

CHAPTER 9

Future Impact of the Oil Sector on Iranian Economic Growth	158
9.1. Introduction	158
9.2. Trends in World Oil Consumption	158
9.2.1. Effects of Energy Substitution on Demand for Oil	160
9.2.2. Effects of Environmental Policies on the Demand for Oil	162
9.2.2.1. Reducing Carbon Emissions Policy	163
9.2.2.2. Energy Conservation	165

9.3. Trends in the Supply of Oil	167
9.3.1. The Level of Oil Exploration	168
9.3.2. Share of OPEC in World Oil Production	169
9.3.3. Share of non-OPEC Oil Producers in World Oil Production	170
9.4. Iranian Policies Towards the Oil Industry	171
9.5. Summary	175
 CHAPTER 10	 177
 Conclusions and Recommendations	 177
Conclusions	177
Recommendations	180
 REFERENCES	 182

LIST OF TABLES

Table 3.1.	The demographic characteristics of Iranian cities	39
Table 3.2.	Distribution of males and females active population among sectors	40
Table 3.3.	Basic economic indicators in 1992	41
Table 3.4.	Composition of private consumption expenditure	42
Table 3.5.	Capital formation of different sectors in 1992	43
Table 3.6.	Sectoral contribution to income and employment in 1992	43
Table 3.7.	Oil production during 1960-1992	46
Table 3.8.	The value of main non-oil exports of Iran in 1992	48
Table 3.9.	Import classification according to international classification of goods (1992)	48
Table 3.10.	Sources of government revenues in 1992	49
Table 3.11.	Sources of government taxes in 1992	50
Table 3.12.	Structure of Government Expenditures	51
Table 3.13.	The major social indicators	53
Table 4.1.	Rates of growth of the Iranian main economic variables during 1960-1992	56
Table 4.2.	Growth of contribution of different sectors to GDP	65

Table 5.1.	Average annual price of oil: 1955-1992	81
Table 5.2.	Price variation of commodities 1955-92 (coefficient of variation)	82
Table 5.3.	Proportional rates of changes in commodity prices 1955-92	84
Table 5.4.	Rank of commodity prices in terms of fluctuations: 1955-92	85
Table 5.5.	Share of world oil production (mb/d)	87
Table 5.6.	Oil exports as percentage of total commodity exports and percentage of GDP	93
Table 6.1.	Previous empirical studies of exports and growth	105
Table 7.1.	Effects of oil exports on real non-oil GDP growth, 1960-1992	121
Table 7.2.	Effects of oil exports on real agricultural output, 1960-1992	122
Table 7.3.	Effects of oil exports on the output of the construction sector, 1960-1992	123
Table 7.4.	Effects of oil exports on the output of the electricity, gas and water sector, 1960-1992	124
Table 7.5.	Effects of oil exports on the output of manufacturing sector, 1960-1992	125
Table 7.6.	Effects of oil exports on the output of the mining sector, 1960-1992	126
Table 7.7.	Effects of oil exports on the output of services sector, 1960-1992	127

Table 8.1.	Iranian trade with its major tradin partners (average 1988-1992)	137
Table 8.2.	Simultaneous equation results for Japan	138
Table 8.3.	Simultaneous equation results for Italy	140
Table 8.4.	Simultaneous equation results for the Netherlands	141
Table 8.5.	Simultaneous equation results for France	142
Table 8.6.	Simultaneous equation results for Belgium	143
Table 8.7.	Simultaneous equation results for Germany	144
Table 8.8.	Simultaneous equation results for Romania	145
Table 8.9.	Simultaneous equation results for Brazil	147
Table 8.10.	Simultaneous equation results for Spain	148
Table 8.11.	Simultaneous equation results for Singapore	149
Table 8.12.	Simultaneous equation results for Turkey	150
Table 8A1.	Testing the order condition	153
Table 8A2.	Testing the rank condition	154
Table 9.1.	The ratio of oil consumption to total energy consumption in OECD countries, 1970-1992	159
Table 9.2.	Proportions of different energy forms in OECD countries	160
Table 9.3.	Oil production in selected countries: 1976-1990	169

LIST OF FIGURES

Figure 2.1.	Iranian hydrocarbon resources and installations	19
Figure 4.1.	Growth of GDP in constant prices, 1960-1992	58
Figure 4.2.	Exports and imports in current prices, 1960-1992	64
Figure 4.3.	Growth of the agricultural sector, 1960-1992	66
Figure 4.4.	Growth of the oil sector, 1960-1992	68
Figure 4.5.	Growth of the industrial sector, 1960-1992	69
Figure 4.6.	Growth of services sector, 1960-1992	72
Figure 5.1.	Changes in prices of oil 1960-1992	81
Figure 7.1.	The export led-growth model	114
Figure 8.1.	The trade interaction model	129
Figure 9.1.	World oil consumption 1970-92	157